MITSUBISHI MOTOR SALES OF AMERICA, Inc.

TECHNICAL SERVICE BULLETIN

SUBJECT:

PAINT DAMAGE IDENTIFICATION AND REPAIR PROCEDURES

NO.	TSB-92-51-001
DATE	MAY, 1992
MODEL	ALL MODELS

PURPOSE

This bulletin provides technical information and procedures for identifying and repairing various types of paint damage on all new vehicles, as well as proper inventory care to minimize future damage.

Acid Rain, Industrial Fallout, Rail Dust or Scratches & Swirl Marks is classified as Industrial paint damage. Other damage, such as tree sap, bird droppings or bee pollen, is classified as Organic paint damage.

NOTE: More detailed information on this subject can be found on the Triple Diamond Communications II Video #44, Paint Damage & Repair.

PAINT COATINGS

There are several types of paint coatings on our vehicles, depending on the model. Each body panel gets a pre-treatment coating, a protective coating and a coat of primer. Next, over the primer, is the color coat. On some models a clearcoat is also applied.

Solid Color

The solid color is applied to a combined *minimum* thickness of 2.75 mils, (.00275"). Some solid colors (Precis,Eclipse) get a clearcoat. On these colors the *minimum* combined thickness is 3.25 mils, (.00325"). (Fig. 1)

NOTE: To check if the vehicle has a clearcoat, use a clean cotton towel and rub some paint cleaner on an out-of-the-way spot, such as a lower body panel. If you see paint on the cloth in the color of the vehicle, then most likely there is no clearcoat. Some paint coatings have a tinted clear.

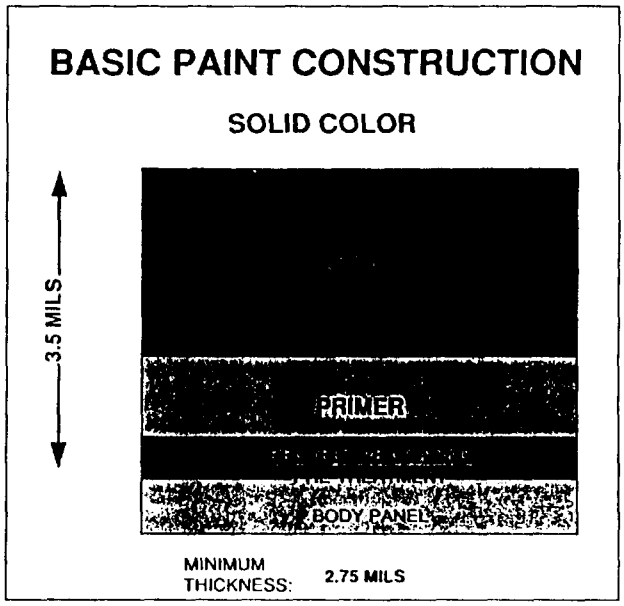

Figure 1

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FILE UNDER: Group 51 in the Dealer Service Information Binder (1142)

CIRCULATE TO:			
☑ SERVICE ADVISOR	☑ SERVICE MANAGER	☑ WARRANTY PROCESSOR	☐ SALES MANAGER
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Metallic
For metallic paint a clearcoat is applied over the color coat. Overall *minimum* thickness for metallic paint will measure over three thousandths, (.00325"), 3.25 mils. (Fig. 2)

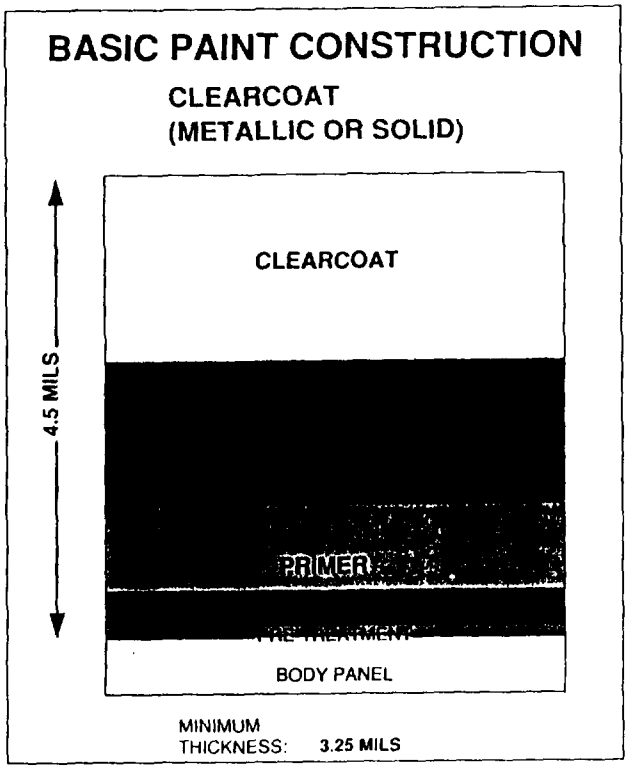

Figure 2

Pearl
For pearl color, such as the 3000GT and the Diamante, a pearlcoat is applied over the color basecoat, and then the clearcoat. Overall *minimum* thickness for this application will measure 3.75 mils., (.00375"). (Fig. 3)

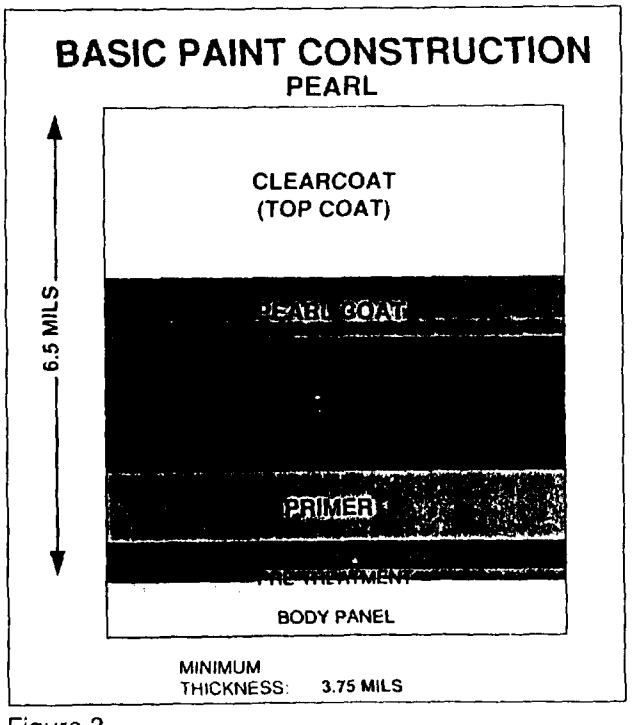

Figure 3

IDENTIFYING PAINT COATINGS

To identify the type of paint used on any Mitsubishi vehicle, check the Vehicle Information Code Plate for the exterior color code. On most of our vehicles this plate is located under the hood on the bulkhead. Next, refer to the latest Technical Service Bulletin (TSB-91-51-005) to identify the different types of finish on late-model vehicles.

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VEHICLE INSPECTION

Examine each vehicle at the time of delivery to see if it needs to be repaired *now* before the damage gets worse sitting on the lot. Wash every vehicle for a close inspection. It's surprising how grit can damage the surface even as you wash the car.

HOW TO MEASURE PAINT THICKNESS

Paint thickness is measured with a mil gauge. A mil gauge measures paint thickness from the top of the sheet metal to the top surface of the coating. There are several different types of gauges. Some gauges are digital and some are mechanical. Take several measurements in the area you will be working on. Keep track of these measurements as you will re-measure later to ensure you don't remove more than 0.5 mil (.0005"). This specification applies to all types of paint coatings.

Recommended Mil gauges:
Elcometer 246 F (Electric/Digital)—Suggested retail price $600.00
ProGauge (Mechanical)—Suggested retail price $30.00

PAINT DAMAGE CAUSES

It helps to inspect the paint surfaces outdoors as well as indoors under fluorescent lights. Some of the affected areas may show up better with the help of inside lighting. Sometimes you can feel the damage; other times it takes more than a touch. The key here is to carefully verify the extent of damage to find a way to repair the affected areas without having to repaint the panel or sometimes the entire vehicle.

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Acid Rain

Acid rain forms when pollution is combined with rain and/or moisture in the atmosphere. When Sulfur Dioxide and Nitrogen Oxides mix with water molecules, they form a weak Sulfuric Acid and Nitric Acid, otherwise known as Acid rain. (Fig. 4)

As the rain evaporates the acid concentration increases, creating pits in the surface. This damage is further accelerated by sunlight. (Photo 1) and (Fig. 5).

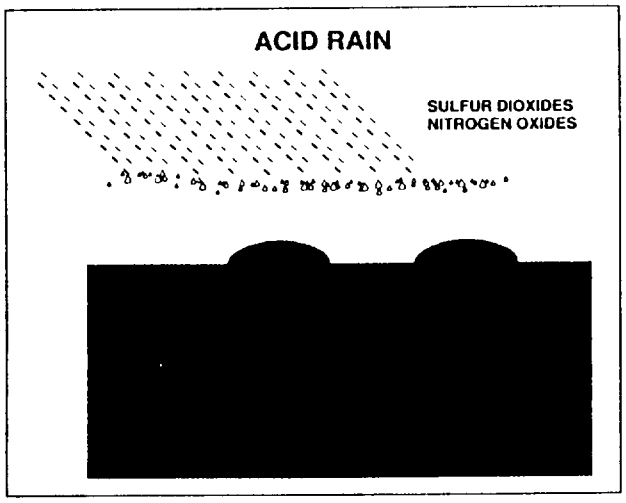

Figure 4

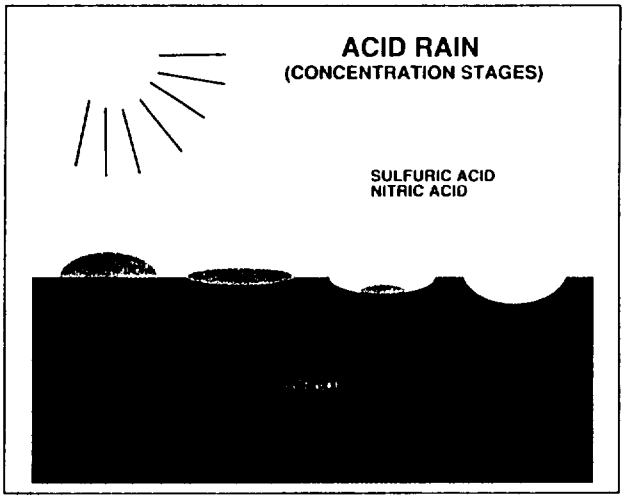

Figure 5

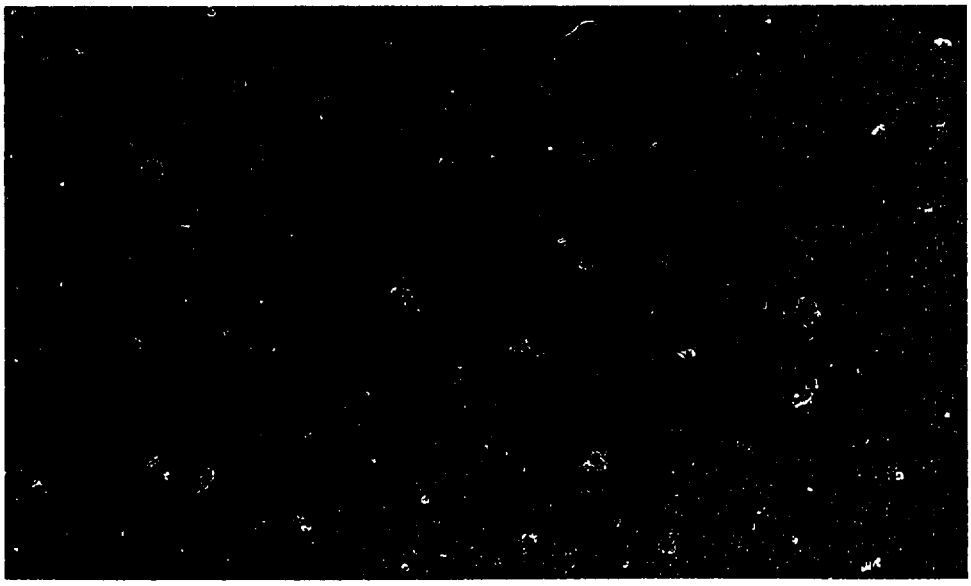

Photo 1

Continued . . .

Rail Dust

Rail dust is iron particles that fall onto the paint which occurs during transportation. These airborne iron particles become embedded into the paint finish on contact. This causes a rough finish and stains the surface, which is created by the iron dissolving when moisture or water are present. (Fig. 6) (Photo 2)

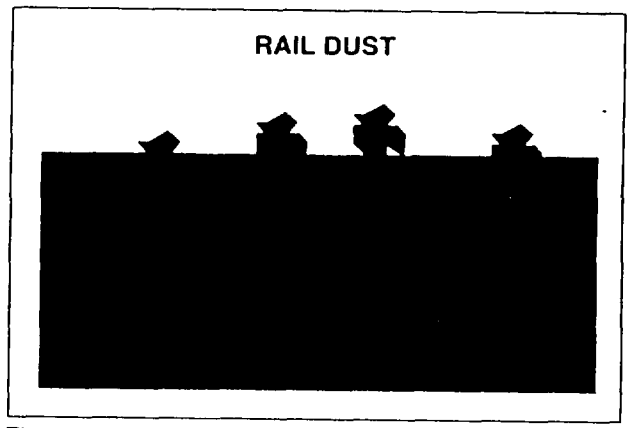

Figure 6

Photo 2

Continued . . .

Scratches

Scratches are the result of contact of a hard object with the painted surface. Some scratches found on new vehicles are caused by tiedown chains used during transportation. (Fig. 7) (Photos 3 & 4)

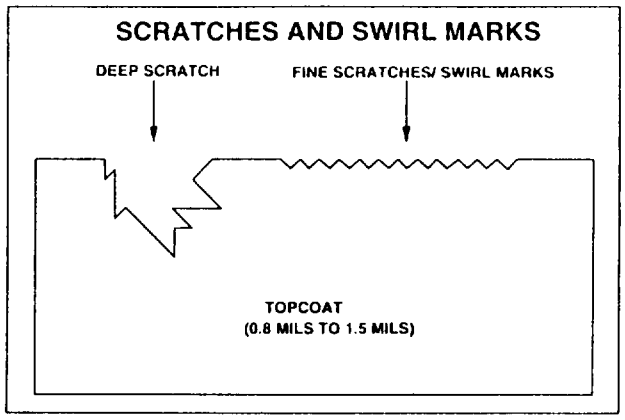

Figure 7

Photo 3

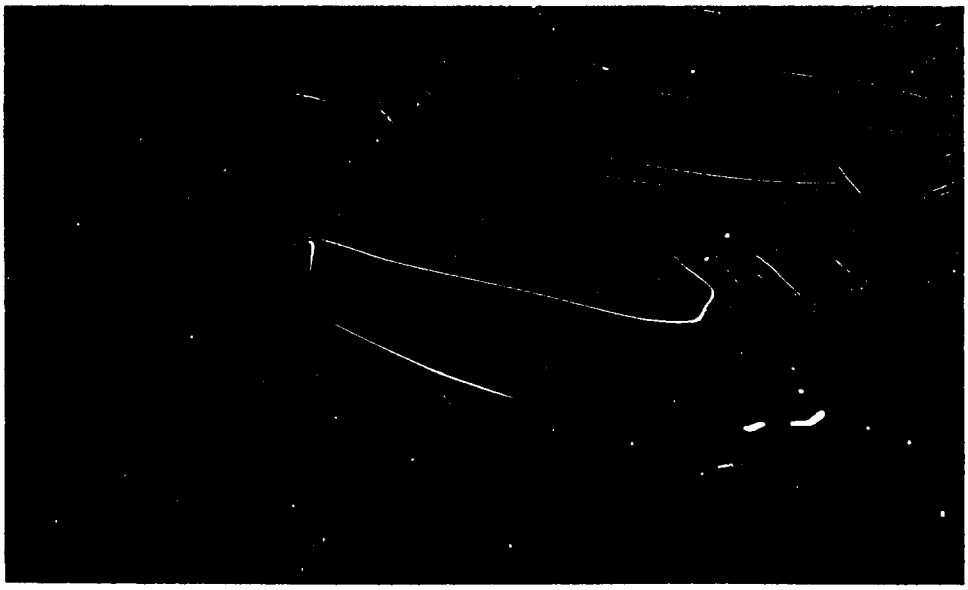

Photo 4

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Swirl Marks
Swirl marks are fine scratches remaining from incomplete or improper buffing operations. (Photo 5)

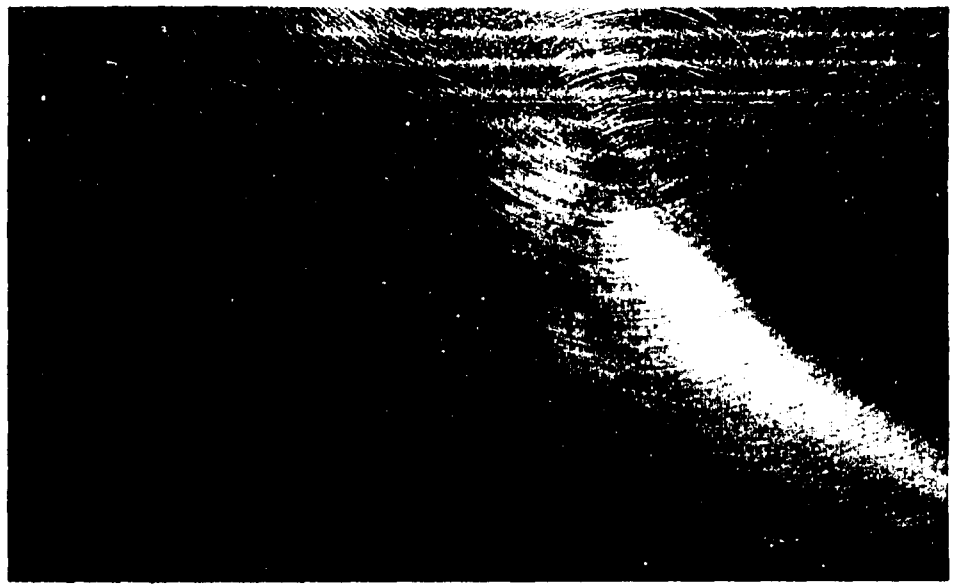

Photo 5

PAINT DAMAGE CLASSIFICATIONS

Again, paint damage should be inspected both outdoors with natural light and indoors under fluorescent lights. It is important to inspect each vehicle at the time of delivery for paint damage. The earlier the damage is found, the easier it is to repair.

All the previously mentioned types of damage can be classified as Minor Damage, Major Damage, and Rail Dust.

Minor Damage is small pits in the paint surface caused by pollution, such as acid rain, rail dust, scratches, swirl marks and organic pollution. The average depth is about 0.2 mils, (.0002″). To correct minor damage, use a buffing procedure.

Major Damage is more severe pitting. The depth of this damage can range from approximately 0.2 mils to 0.4 mils, (.0002″-.0004″). To correct major damage, wet sanding and buffing will be necessary. Any damage more than 0.5 mils deep will require repainting of the affected area.

Rail Dust can be either minor or major damage depending on the severity. The difference in repairing rail dust is the method of repair. For rail dust first remove the iron particles by using an Industrial Fallout Remover. After the rail dust particles have been removed, small pits will be left in the paint. Repair these pits by using the appropriate procedure (i.e., minor or major damage repair).

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REQUIRED MATERIALS

There are numerous brands available for repairing paint damage. Listed below are a few examples:

	Part No.
MEGUIAR'S	
No. 2 Fine-Cut Cleaner	M-0232
No. 1 Medium-Cut Cleaner	M-0132
No. 4 Heavy-Cut Cleaner	M-0432
No. 9 Swirl Remover	M-0932
Yellow foam cutting pad (Fine)	W-1000
Pink foam cutting pad (Medium)	W-7000
Beige foam polishing pad	W-9000
Backing pad (for wet sanding)	E-7200
Sanding paper (2000 grit)	S-2025
3M	
"Perfect-it" Foam Polishing Pad Glaze	05995
"Perfect-it" Foam Polishing Pad	05725
"Imperial" Hand Glaze	05990
MISC MATERIALS	
Sponge & soft towels	——
Rubbing alcohol & water solution	——
Baking Soda	——
ZEP	
Industrial Fallout Remover	X-20472

NOTE: Use only one (1) manufacturer's system. Do not mix products.

REPAIR PROCEDURES

The goal in correcting paint damage is to repair it, not to cover it up. This means removing only a thin part of topcoat that is damaged. The maximum amount of topcoat that can safely be removed is 0.5 mil, (.0005"). That's the **MAXIMUM**. Clearcoat thickness is approximately 0.8-1.5 mils. If you remove too much of the clearcoat, this will leave a dark spot or a haze in the paint which cannot be repaired by buffing.

The following general instructions should be used to repair any paint damage. See minor, major and rail dust repair information for additional instructions.

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GENERAL INSTRUCTIONS

1) Wash the vehicle to remove loose dirt. Remove any road tar with a silicone wax & tar remover. Dry the vehicle with soft cotton towels. A chamois is not recommended as it may hold dirt and scratch the paint surface.
2) Inspect the paint finish, preferably under fluorescent light and in natural light, to identify any paint damage.
3) All repairs should be done out of direct sunlight and the vehicle's surface should be allowed to cool down before starting.
4) When attempting to repair, do not remove more than 0.5 mil of the topcoat. That's the safety margin.
5) A variable speed rotary buffer is recommended (1200-1800 RPM).
6) Start by buffing a small section two feet by two feet. We recommend using foam pads rather than wool pads.
7) Avoid buffing edges or character lines where the paint is thinner.
8) Use a small amount of product on the pad. Too much cleaner will load up the pad and waste material.
9) Do not buff dry any cleaner on the paint surface.
10) Use a soft cotton towel to wipe off all remaining product.
11) Use only light pressure and the weight of the machine during buffing. Keep the pad flat on the surface. Allow the cleaner to do the work.

MINOR DAMAGE REPAIR

1) Measure the paint thickness with a mil gauge and record the measurements on a sheet of paper. These measurements will help you to track the amount of paint removed.
2) Start buffing the affected areas by using the **least** aggressive cutting pad and **least** aggressive cleaner. Repeat this step if necessary. (Remember to re-measure the paint thickness after buffing.) (Fig. 8 & 9)
3) Follow the repair with a fine polish and a fine polishing pad to restore luster and gloss and to remove any swirl marks which may remain on the surface.
4) Spray an alcohol solution (50% water/ 50% alcohol) on the affected area. This will remove any polish so you can be sure the damage is really repaired, not covered over.
5) Repeat step 3.

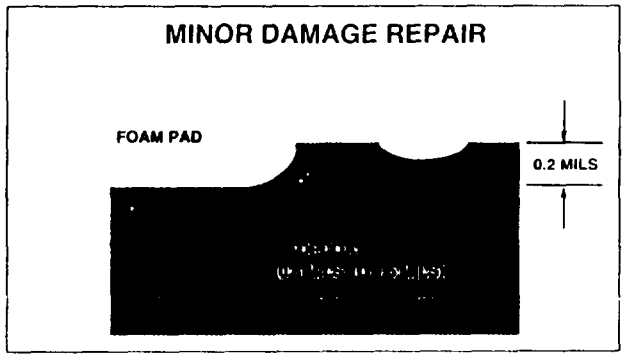

Figure 8

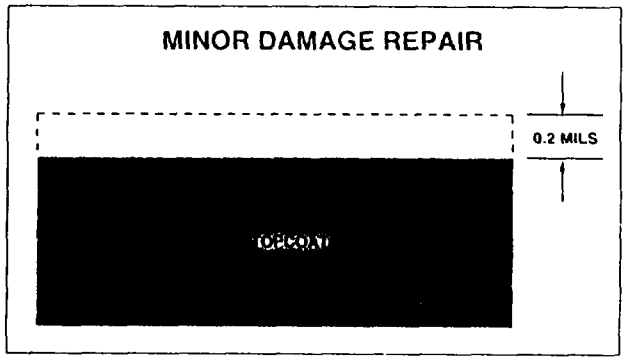

Figure 9

Continued . . .

MAJOR DAMAGE REPAIR

1) Measure paint thickness with a mil gauge and record the measurements on a sheet of paper. These measurements will help you to track the amount of paint removed. (Fig. 10)
2) To wet sand the damaged area, soak a #2000 grit wet sandpaper in soapy water for a minimum of fifteen (15) minutes.
3) Use a soft foam rubber sanding pad with the sandpaper to evenly distribute the sanding force. Always sand in one direction. Frequently apply clean water to your work area to flush away particles and prevent clogging of the paper.
4) Re-measure the paint surface. **REMEMBER**, do not remove more than 0.5 mil (.0005") of topcoat. (Fig. 11)
5) To remove the sanding scratches, buff the area using a medium cutting pad and a medium-cut cleaner.
6) Follow the repair with a fine polish and polishing pad to restore luster and gloss and to remove swirl marks which may remain.
7) Spray an alcohol solution (50% water/ 50% alcohol) on the affected area. This will remove any polish so you can be sure the damage is really repaired, not covered over.
8) Repeat step 6.

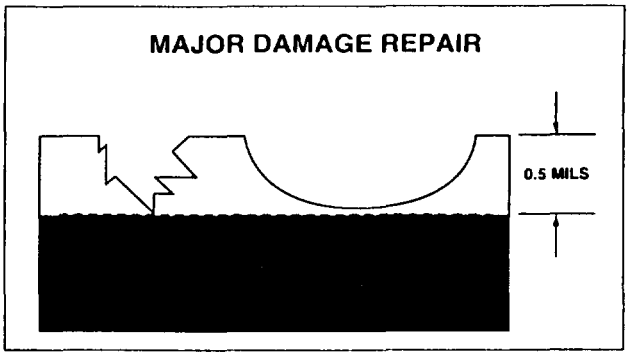

Figure 10

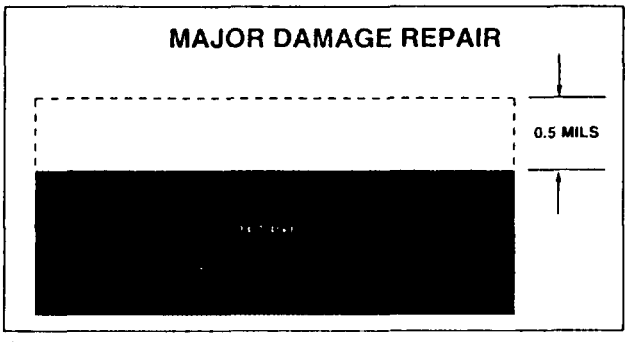

Figure 11

RAIL DUST REPAIR

1) Use an Industrial Fallout Remover to remove the iron particles.

   WARNING:
   Use only as directed by the manufacturer. Carefully read all warnings and instructions. When working with an Industrial Fallout Remover (acid wash), you will need protective gear (rubber gloves and goggles).

Continued . . .

2) Mix the solution in a large bucket to the proper specifications recommended by the Industrial Fallout Remover manufacturer.

3) Soak large cotton towels in the solution. Apply the soaked towels on the vehicle. Do one section at a time (i.e. hood, roof, etc.).

4) Allow the towels to remain on the vehicle for the amount of time recommended by the manufacturer of the product. Remember, keep the towels wet with water. Do not allow the solution to dry on the vehicle.

5) Next, rinse the vehicle with water and inspect the area. Repeat the application, if necessary. When rinsing, use a baking soda and water solution to neutralize the acid (4 tablespoons to the gallon). Flush the surface with plenty of water.

6) After the iron particles have been dissolved by the acid wash, any remaining pits caused by the rail dust can be removed by following the repair steps under Minor or Major Damage Repair. (Fig. 12 & 13)

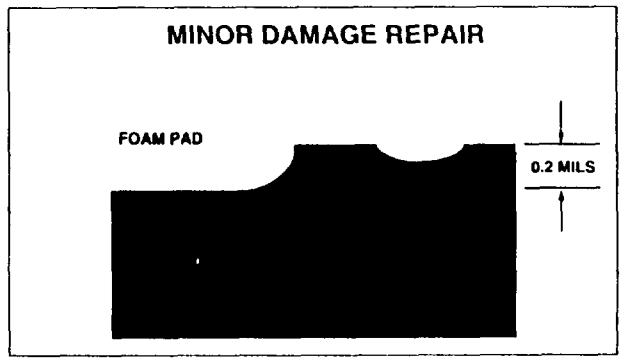

Figure 12

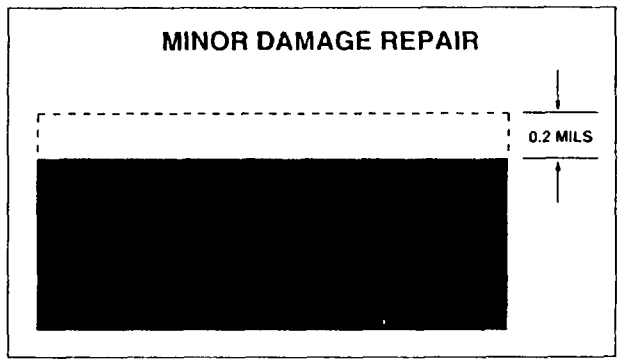

Figure 13

INVENTORY CARE

Inventory care begins with frequent washing to help minimize the potential for acid rain or hard water spotting damage. After a rain, wash every vehicle with deionized water to remove any pollutants before they have a chance to attack the paint. Dry thoroughly because moisture combined with pollution can also damage the vehicle's paint finish. Also, keep the vehicles a fair distance apart on the lot to minimize dings and scratches.

WARRANTY INFORMATION

The paint damage outlined in this bulletin is normally classified as transportation damage and is therefore not submitted with a warranty claim. To ensure payment for services performed, it is essential to thoroughly inspect new vehicles upon arrival and note any paint damage on the delivery receipt.